

Amendment and Response

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Serial No.: 10/728,446

Confirmation No.: 9352

Filed: 5 December 2003

For: SILVER COATINGS AND METHODS OF MANUFACTURE

Remarks

The Office Action mailed January 15, 2009 has been received and reviewed. Claims 1, 15, 27, and 48-50 having been amended, the pending claims are claims 1-4, 6-35, 37-39, and 45-50. Reconsideration and withdrawal of the rejections are respectfully requested.

Each of the independent claims has been amended to clarify that the dried coating comprises the sparingly soluble silver-containing compound (such as silver oxide) deposited from the coating solution (prepared prior to coating on a substrate), and further wherein the dried coating is essentially free of silver metal. Support for this can be found in Applicants' specification at page 3, lines 32-33.

Double Patenting Rejection

Claims 1-4, 6-35, 37-39, and 45-50 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-51 of co-pending U.S. Patent Application No. 10/917,002. Claims 1-4, 6-35, 37-39, and 45-50 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21-30 of co-pending U.S. Patent Application No. 10/917,102. Upon an indication of otherwise allowable subject matter and in the event these rejections are maintained, Applicants will provide an appropriate response.

The 35 U.S.C. §103 Rejection

The Examiner rejected claims 1-4, 7-14, 25, 37, 45, and 48-50 under 35 U.S.C. §103 as being unpatentable over GB 769,799 in view of WO 02/43743. The Examiner rejected claims 6, 15-24, 26-35, 38 and 39 under 35 U.S.C. §103 as being unpatentable over GB 769,799, combined with WO 02/43743, and further in view of U.S. Patent No. 4,592,920. The Examiner rejected claim 46 under 35 U.S.C. §103 as being unpatentable over GB 769,799, combined with WO 02/43743, and further in view of U.S. Publication Application No. 2003/0054025. The Examiner rejected claim 47 under 35 U.S.C. §103 as being unpatentable over GB 769,799, WO 02/43743, U.S. Patent No. 4,592,920, and U.S. Publication Application No. 2003/0054025.

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Each of the independent claims having been amended, these rejections are rendered moot. Insofar as any of these rejections might apply to the presently pending claims, they are respectfully traversed.

The method of GB 769,799 is extremely different than Applicants' method, uses more reagents, and is much more complicated than Applicants' method, as well as much more wasteful, much less economical, and much less efficient than Applicants' method.

GB 769,799 teaches that in order to make a photostable silver fabric, the silver salt and a photostabilizing metal salt need to be in the First solution. The First solution (with the silver salt) should not contain ammonia. Further, GB 769,799 teaches that the silver salt and the photostabilizing metal salt need to be co-precipitated by the addition of a Second solution. That is, GB 769,799 discloses a method that uses multiple solutions: (1) a first solution containing a water-soluble silver salt and a water-soluble salt of a metal other than silver (the first salt); and (2) a second solution that includes two water soluble salts (the second and third salts) and ammonia or other water-soluble basic nitrogen compound. There is no teaching or suggestion of forming a "solution of silver salt . . . and ammonia compound"¹ and subsequently coating the solution on a substrate.

In contrast, Applicants' claims each recite: combining the sparingly soluble silver-containing compound (e.g., silver oxide) with the ammonium-containing compound (e.g., ammonium carbonate) to form an aqueous solution prior to coating on a substrate, and subsequently, coating the solution formed by combining the silver-containing compound and the ammonium-containing compound on a substrate.

The Examiner is clearly misinterpreting GB 769,799 at page 6 of the Office Action ("...i.e., both the silver salt and ammonium compound are in single solution prior to application to the article."); and at page 7 of the Office Action ("GB '799 teaches ammonia added to the

¹ The only example that includes a solution of a silver salt and an ammonium compound is Treatment O in Example 2, which was indicated as a failure because it was "not stable against discoloration by light" (page 7, lines 45-57).

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sparingly water soluble salt solution for solublizing the solution . . ."). These are not correct interpretations.

The second salt in the second solution of GB 769,799 includes an anion of a sparingly water-soluble silver salt (e.g., chloride in the form of sodium chloride), but not silver cations.² Thus, there is no silver-containing compound in the second solution with the ammonia.³ The silver-containing compound and ammonia (or other basic nitrogen compound) are in two separate solutions that are applied sequentially (i.e., "a succession of properly chosen solutions" as disclosed at page 2, lines 21-22 of GB 769,799) to a substrate with mechanically removing excess solution (e.g., "squeezing, wringing, or wiping") between application of the two separate solutions. There is no teaching or suggestion of combining these compounds prior to coating them on a substrate. Applicants request the Examiner to more closely read GB 769,799, particularly starting at page 2, line 77.

Furthermore, the silver salt that is deposited out of solution in GB 269,799 is then converted to another silver salt while in contact with the substrate. That is, the final silver salt in the dried coating of GB 269,799 is formed on the substrate by depositing the second solution. Although a sparingly soluble silver salt results, it is transformed into this from a soluble silver salt while on the substrate upon deposition of the second solution containing an anion of a sparingly water-soluble silver salt.

In contrast, Applicants' method involves depositing the sparingly soluble silver salt out of the coating solution that includes the ammonium-containing compound, which was formed prior to the coating step. For example, claim 1 recites in part, providing a sparingly soluble silver-containing compound, providing an ammonium-containing compound, combining the sparingly soluble silver-containing compound with the ammonium-containing compound to form an aqueous solution prior to coating on a substrate, and subsequently, coating the solution formed by combining the silver-containing compound and the ammonium-containing compound on a substrate, and drying the coating wherein the dried coating includes the sparingly soluble

² Other than in failed Treatment O in Example 2, which includes AgCl.

³ Other than in failed Treatment O of Example 2, which includes AgCl.

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silver-containing compound deposited from the coating solution. This is neither taught nor suggested by GB 769,799.

Thus, there is no teaching or suggestion of Applicants' more efficient and less wasteful process for depositing a sparingly soluble silver salt on a substrate. There is no teaching or suggestion that an ammonium-containing compound can be used in one solution with a sparingly soluble silver salt and used to subsequently deposit such salt on a substrate. There is no teaching or suggestion that such process could result in a dried coating that is stable against darkening, for example, when exposed to at least one of visible light, ultraviolet light, electron beam, and gamma ray sterilization.

It is respectfully submitted that GB 769,799 is characterized inaccurately at page 5 of the Office Action ("... dipping or wetting the substrate surface with solution comprising aqueous solution of silver salt including silver nitrate, and ammonia compound to solubilize the silver salt, followed by drying the wet substrate. . ."); at page 7 of the Office Action ("... GB '799 disclosed ammonia added to the sparingly water soluble salt solution . . ."); and at pages 8-13 of the Office Action ("... using an aqueous solution comprising sparingly water soluble silver salt and ammonia on the article followed by drying the article as disclosed by GB '799.") (several occurrences). GB 769,799 does not disclose the effective use of a solution that includes a sparingly soluble silver salt and an ammonia compound.⁴

With respect to WO 02/43743, it is true that this teaches ammonium salts (such as ammonium carbonate) facilitate silver photostabilization. This is because the ammonium compound remains on or in the material. In contrast, the ammonia or amine, which serves as a solubilizer in GB 769,799 is removed by vaporization (see, e.g., page 2, lines 28-29). Thus, it is

⁴ The only possible example in GB 769,799 that can be characterized in this manner is Example 2, Treatment O, which discloses a formulation where AgCl is combined with aqueous ammonia to form a solution. However, two solutions are used in Treatment O, and the "[c]otton cloth treated according to Treatment "O" was not stable against discoloration by light" (page 7, lines 45-47). Thus, this is a teaching away from Applicants' invention.

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not present on the dried article. So, it is not clear to Applicants that the ammonia or amine could be assisting in photostabilization of the silver on the dried article. Photostabilization of the silver salt in GB 769,799 is being accomplished through the use of a sparingly water-soluble compound of a metal other than silver (see, e.g., page 1, lines 85-89). Therefore, there is no motivation to combine the teachings of WO 02/43743 with GB 769,799.

Also, with respect to page 7 of the Office Action (last paragraph), it is stated that GB 769,799 discloses "an aqueous solution comprising sparingly water soluble silver nitrate and ammonia." This is not accurate for at least two reasons. One, silver nitrate is characterized at page 2, line 80 of GB 769,799 as a water-soluble salt, not a sparingly soluble salt. Two, the silver nitrate is in the first solution and the ammonia is in the second solution.

Withdrawal of this rejection based on the combination of GB 769,799 and WO 02/43743 is respectfully requested. U.S. Patent No. 4,592,920 and U.S. Publication Application No. 2003/0054025 do not provide that which is missing from the combination of GB 769,799 and WO 02/43743. Withdrawal of these rejections is requested.

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Summary

It is respectfully submitted that the pending claims 1-4, 6-35, 37-39, and 45-50 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives at the telephone number listed below if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted

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CERTIFICATE UNDER 37 CFR §1.8:

The undersigned hereby certifies that this paper is being transmitted by facsimile in accordance with 37 CFR §1.6(d) to the Patent and Trademark Office, addressed to **Mail Stop Amendment**, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 8th day of April, 2009, at 2:31 PM (Central Time).

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